

a clutch; and

a lock member.

1.3 (23) (NEW) The oven door locking member of claim 22 wherein said clutch has a first side and a second side, wherein said first side is in engagement with said second side.

REMARKS

Applicants would like to thank the Examiner for the telephone conversation with Applicants' representative on September 27, 2002, and Applicants hereby confirm the provisional election made during that conversation to prosecute claims 1-17 (Species I).

Claims 1-23 are pending and claims 1-17 have been rejected. Claims 1 and 7 have been amended without adding new matter. Claims 2-6 and 8-17 are left unchanged. Claim 18 has been cancelled without prejudice. Claims 19-23 have been added without adding new matter. Applicants respectfully assert that claims 1-17 as amended and left unchanged, and claims 19-23 as added, together with the arguments presented below, are distinguished from the prior art references cited by the Examiner.

General Comments

Applicants' invention is an oven locking mechanism which provides substantially different lock and unlock temperatures, such as a lock temperature substantially higher than an unlock temperature, by virtue of the mechanical action of the locking mechanism and independent of the manner of heating or cooling the oven. It is the physical structure of the lock mechanism components and their mechanical interaction which provide the substantial temperature difference between locked and unlocked states of the oven door. Accordingly, this

temperature difference would occur even in an oven having substantially uniform temperature between the oven air and the locking mechanism. The reference cited by the Examiner (Seigel), however, fails to teach an oven door locking mechanism providing substantially different lock and unlock temperatures independent of the manner of heating and cooling the oven. Additional references cited by the Examiner (Fox and Staples) fail to teach a mechanical oven locking mechanism which provides substantially different lock and unlock temperatures in an oven. There can be no anticipation unless a single prior art reference alone identically discloses each and every element of the claimed invention. Jamesbury Corp. v. Litton Industrial Products, Inc., 225 USPQ 253, 256 (Fed. Cir. 1985) (anticipation not shown even by prior art disclosure which is "substantially the same" as the claimed invention); In re Oelrich, 212 USPQ 323 (CCPA 1982). As none of the applied references individually disclose each and every element of Applicants' claims, they can not anticipate Applicants' invention. Applicants will address the independent claims with respect to the rejections because to the extent they are patentable over the cited art, claims dependent therefrom are also patentable¹.

Applicants would like to note for the record that the Examiner has failed to designate, as nearly as practicable, the particular part relied on in the figures of the cited art as the basis for rejecting claims 4-17. 37 C.F.R. 1.106(b). Particularly, the Examiner refers to "A" in Fig.4 of Seigel for the disclosure of a "clutch", to "B" in Fig.3 of Fox for the disclosure of a "clutch mechanism", and to "E" in Fig.4 and "G" in Fig.3 of Staples for the disclosure of a keyed aperture and a slot respectively. However, none of the respective figures cited by the Examiner,

¹ See Ex Parte Leavel, 212 USPQ 762 (Bd. App. 1979) (dependent claims are patentable over the prior art where they depend from patentable claims).

nor any of the figures in the respective references, include an element or component labeled with A, B, E or G. Without designation of a specific feature as teaching an element recited in Applicants' claims, a prima facie case of anticipation has not been made. The anticipation rejections, therefore, are improper and must be withdrawn. However, the cited art is deficient with respect to other elements recited in Applicants' claims, as discussed below.

Claim Rejections Under 35 U.S.C. §102

Claims 1 - 6 stand rejected under 35 U.S.C. §102(b) as anticipated by Seigel, U.S. Patent No. 3,540,767. Specifically, the Examiner refers to Seigel's background (col.1, lines 15-60), description (col.3, lines 60-75; Fig.3) and Figure 4 (Nos. 46, 52 and A) to allege that Seigel discloses Applicants' invention claimed in claims 1 - 6. Applicants respectfully disagree.

Applicants' amended independent claim 1 recites "an oven door locking mechanism which locks and unlocks the oven door at substantial different temperatures which are determined by the mechanism independently of the manner in which the oven is heated or cooled." Thus, it is the physical structure and mechanical design and operation of Applicants' locking mechanism during heating and cooling of the oven which determines the substantially different lock and unlock temperatures of the oven door, and not the manner of heating or cooling the oven door. Seigel's locking mechanism, however, provides lock and unlock temperatures which are dependent on the temperature difference between the oven air and the oven lock mechanism and, therefore, determined by the manner of heating or cooling the oven, and not by the physical structure of the lock mechanism.

Seigel alleged that the problem with the prior art locks is that their lock and unlock temperatures are dependent upon a non-uniformity of temperature between the oven air

and the oven locking mechanism, i.e., a temperature lag² therebetween (col.1, lines 15-60). Seigel attempted to address this problem by modifying the prior art oven locking mechanism and reversing the effect of the temperature lag during cooling. Unfortunately, Seigel's locking mechanism resulted in an unlock temperature higher than the lock temperature, and to this end, his mechanical design is flawed.

Seigel's lock mechanism, as shown in Fig. 4, includes a thermally responsive coil 46, a lock member 52 firmly affixed to one end of coil 46, an arm 56 firmly affixed to lock member 52, and a locking plate 58 freely rotatable around lock member 52, but "fixedly carried" by arm 56 through an arcuate slot 60 and a pin 62. Between the head portion of pin 62 and plate 58 is a spring 64 which exerts tension such that the "motion of arm 56 is transmitted through pin 62 to plate 58, whereby the plate 58 will be caused to rotate with arm 56." (col.3, line 52-col.4, line 2). Thus, plate 58, through arm 56, rotates, via pin 62, in response to the rotating coil 46 which, in turn, responds to the heating or cooling of the oven. Plate 58 also has a lock element 66 and a lug 68, both of rotate with plate 58 to abut a jam 30 during heating and lock the oven door (Fig. 2).

Mechanically, Seigel's oven lock structure and design is faulty because it locks the oven at a temperature equal to or lower than that at which it unlocks. As shown in Fig.1, where the oven door is unlatched at a temperature below the locking temperature, the plate 58 and lock element 66 are in a direction opposite the latch mechanism and do not influence the position and movement of the latch. Fig. 2 represents the locking mechanism in a "heating" oven,

² Seigel alleged that during heating and cooling, the temperature of the lock mechanism lags behind that of the air in the oven by as much as about 150°C to about 175°C.

with the door at a “locking” temperature, where plate 58 has rotated to cause element 66 and lug 68 to abut jam 30 preventing the door from being unlatched, and further limit rotation of plate 58 as heating progresses (col.4, line 19-23). Fig. 6 represents the locking mechanism when the “heating cycle is completed”, and the oven has reached full temperature, such as about 1000°C during a self cleaning mode, and arm 56 has rotated further along arcuate slot 60 in response to continued heating beyond the lock temperature. Fig. 5 represents the locking mechanism when the oven begins to cool during the cooling cycle where “the pressure exerted by spring 64 upon plate 58 and arm 56 will cause the arm 56 to move the plate 58 simultaneously in the reverse direction. This, therefore, causes the lock 66 to be moved out of path of movement of jam 30 within a relatively short period of time”, thus allowing the oven door to be unlatched and opened. (col.4, lines 54-59). What actually happens, as illustrated, is as the oven is heated, thermal coil 46 rotates causing arm 56 and plate 58 to rotate with lock member 52 against jam 30 and lock the oven at a temperature determined by the degree and manner of heating the oven. Once the heating cycle is complete and the oven begins to cool, the retracting thermally responsive coil 46 causes reverse rotation of lock member 52, arm 56, and plate 58 (through the tension of spring 64 on pin 62) and immediately releases the “blocked” movement of jam 30 thereby allowing the oven door to be unlocked. Accordingly, the oven door unlocks at dangerously high temperatures (at a temperature slightly lower than the highest temperature achieved), and in any event, at a temperature higher than the lock temperature. This dangerous situation occurs because there is nothing structurally preventing the reverse rotation of plate 58 upon cooling. The tension exerted on pin 62 via spring 64 causes immediate unlock once the oven has begun to cool. However, in doing so, Seigel’s unlock temperature is purely temperature dependent and is determined the

extent of heating as well as the manner of cooling. Seigels's locking mechanism is essentially dependent on the non-uniformity of the oven temperature for differentiating between the lock and unlock temperatures. The temperature lag is, in turn, dependent upon the manner in which the oven is heated and cooled. The lag will be greater in an oven heated or cooled quickly and less in an oven heated or cooled slowly. It follows that if the manner of heating was altered and the Seigel oven was heated only slightly beyond the lock temperature and cooled, it would unlock at a temperature only slightly higher than, but not substantially different from, the lock temperature. In contrast, Applicants' locking mechanism determines lock and unlock temperatures mechanically and independent of the manner of heating and cooling the oven. Therefore, Seigel does not anticipate Applicants' independent claim 1, and claims dependent therefrom.

With reference to new claims 19-23, Applicants' independent claim 19 recites an oven door locking mechanism "which locks the oven door at a temperature substantially higher than that at which it unlocks the oven door." As described above, Seigel's locking mechanism locks the oven door at a temperature equal to or lower than that at which it unlocks the oven door. Accordingly, Seigel does not teach this limitation and, therefore, cannot anticipate Applicants' independent claim 19, and claims 20-23 dependent therefrom.

Claims 1-6 stand rejected under 35 U.S.C. §102(b) as anticipated by Fox, U.S. Patent No. 4,862,870. Specifically, the Examiner refers to #80 as a thermally responsive element, #94 as a lock member, and "B" as a clutch mechanism in Fig.3 to allege that Fox discloses Applicants' invention claimed. Applicant respectfully disagrees.

Fox fails to teach an oven door locking mechanism having substantially different lock and unlock temperature, as called for in Applicants' independent claim 1, and therefore also

fails to teach a locking temperature substantially higher than an unlocking temperature, as called for in Applicants' independent claim 19. More specifically, Fox discloses a locking means "comprising a locking pin reciprocally movable between a locked position and an unlocked position, operatively coupled with a snap-action bimetal member mounted in thermal communication with an oven cavity wall. The bimetal member moves the locking pin to its locked position when the temperature sensed by the bimetal rises above the locking temperature. the locking pin in its locked position blocks the return path of the latch tail extending from the latch handle portion of the latch mechanism thereby preventing the opening of the latch until the temperature in the oven cavity falls below the locking temperature" (col.2, lines 54-col.3, line 2). Thus, Fox actually teaches the contrary of Applicants' invention as Fox's oven locking mechanism locks the oven door latch at a temperature that is the same or substantially similar to the temperature at which it unlocks, and not "substantially different" as in Applicants' claimed invention. Fox reinforces this conclusion in describing Fig.5, disclosing "the locking pin 94 locks the latch mechanism in its closed position when the temperature sensed by the disk 80 exceeds the bimetal trip point temperature and keeps it locked until the sensed temperature drops below the trip point temperature" (col.6, lines 5-10). Moreover, the snap-action bimetal 80 would simply not allow for a substantial temperature differential between lock and unlock temperatures because as soon as the temperature drops below the threshold limit of the bimetal, the sudden and immediate retraction (snap) of the bimetal causes the lock pin 94 to release. Thus, by virtue of the snap-action, the bimetal ensures a substantially similar lock and unlock temperature, the only difference being reflective of the hysteresis of the bimetal itself. Further, nowhere in the Fox disclosure is it suggested that the lock and unlock temperatures differ substantially. In contrast,

Applicants' lock mechanism provides the temperature differential due to the structure of the physical components and their mechanical interaction, and not from inherent properties of the thermally responsive element. As Fox does not disclose or suggest a locking mechanism providing a lock temperature substantially different from an unlock temperature, Fox can neither anticipate nor render obvious Applicants' invention in independent claims 1 and 19, and claims dependent therefrom.

Claim Rejections Under 35 U.S.C. §103

Claims 7-17 are rejected under 35 U.S.C. §103(a) as being unpatentable over Fox in view of Staples. Particularly, the Examiner alleges that Staples teaches the "keyed aperture" recited in claim 7, but not taught by Fox. Applicant respectfully disagrees.

Claim 7 has been rewritten in independent form and recites the elements of claims 1, 4 and 5, particularly the element calling for an oven door locking mechanism which "locks and unlocks the oven door at substantially different temperatures." Fox, in view of Staples, does not render obvious Applicants' amended claim 7 for the reasons set forth below.

First, Staples is not relevant to Fox (or to Applicants' invention) and, therefore, is not properly combined with Fox. Unlike Fox (or Applicants' invention), Staples oven door locking mechanism determines the lock and unlock temperatures electronically by electrical switches 132 and 134 and a solenoid 62 (col.6, lines 6-55; Fig.5 illustrates an electrical schematic). The switches are pre-set to respond to desired temperatures to effect lock and unlock states of the oven door. Staple's electrical switches have contacts which open and close appropriate circuits to control and determine the temperature at which the oven door locks and unlocks. Nowhere in Staples is it taught that the elements responsible for locking and unlocking

the oven door move in direct response to heat, rather they respond to the signals from the electrical switches. Fox's oven door locking mechanism, in the other hand, is mechanically driven and the lock and unlock temperatures are determined mechanically and directly in response to the temperature, and not by electronic means. In short, one of ordinary skill in the art would not combine the teaching of Staples with that of Fox as the operation of the locking mechanisms are different and the determination of lock and unlock temperatures are not related. Accordingly, Fox cannot be read in view of Staples to render Applicants' invention obvious.

Second, even if Fox and Staples were properly combined, the combination would not suggest or motivate to one of ordinary skill in the art a locking mechanism which locks and unlocks the oven door at "substantially different" temperatures, as called for in Applicants' amended claim 7. More specifically, Staples mechanism locks the oven door at "near approximately 550°F" and unlocks the oven door once "the interior temperature of the oven drops below approximately 540°F." (col.6, lines 18-25). Thus, the temperature differential between the lock and unlock temperatures is a scant 10 degrees or less. A 10 degree differential is hardly "substantial" in light of the temperature at stake (10° is less than 2% of 550°) and the purpose of keeping the oven locked, i.e., for "the self-cleaning process." In fact, this teaching is in line with Fox, in that a substantially similar lock and unlock temperature is provided. Accordingly, this teaching, together with Fox, does teach, suggest or motivate Applicants' amended claim 7, and claims 8-17 dependent therefrom.

Third, a groove in Staples lock pin, which the Examiner alleges to be a "keyed aperture" (E" in Fig.4), is irrelevant and non-functional with respect to locking and unlocking the oven door at "substantially different temperatures." Staples does even bother to designate this

groove with a number or a letter, let alone an “E” as the Examiner has alleged. Further, Staples does not describe its relation with other structural components in the locking mechanism.

Obviously, Staples does not consider this feature important enough to mention or describe in the disclosure, let alone teach any function and purpose thereof. In contrast, Applicants’ locking mechanism includes a keyed aperture which is “engaged with said thermally responsive element, whereby the oven door locking mechanism locks and unlocks the oven door at substantially different temperatures.” (Applicants’ claim 7). As Staples does not suggest or motivate such a keyed aperture, a reading of Fox, in view of Staples, would not render Applicants’ claim 7, and claims 8-17 which depend therefrom, obvious.

Attached hereto as Appendix A is a marked-up version of the changes made to the claims by the current amendment. Appendix A is captioned “**Version with Markings to Show Changes Made**”.


CONCLUSION

For the foregoing reasons, the Applicant submits that claims 1-17 and 19-23 are patentable and a notice of allowance is respectfully requested.

The Examiner is invited to telephone the undersigned attorney if there are any outstanding questions or issues.

Respectfully submitted,

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APPENDIX A

“VERSION WITH MARKINGS TO SHOW CHANGES MADE”

Serial No. 10/002,049

IN THE CLAIMS:

Claims 1 and 7 have been amended as follows:

(1) (AMENDED) An oven door locking mechanism which locks and unlocks the oven door at substantially different temperatures which are determined by the mechanism independently of the manner in which the oven is heated or cooled.

(7) (AMENDED) An [The] oven door locking mechanism [of claim 5 further] comprising:

a clutch mechanism comprising a thermally responsive element, a clutch, and
a lock member; and

a first spring in contact with said lock member,

wherein said lock member defines a first side of said clutch as a keyed aperture, said keyed aperture is engaged with said thermally responsive element,

whereby the oven door locking mechanism locks and unlocks the oven door at substantially different temperatures.